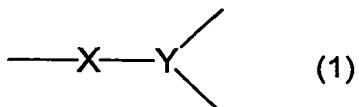


Claims

1. A dendritic polymer having a branching structure including repeating units each having a branch portion, each 5 of said repeating units having a structure represented by formula (1), and containing a linear portion X formed of an optionally substituted divalent organic group and a branch portion Y formed of an optionally substituted trivalent organic group:



10 characterized in that the linear portion X contains at least one thienylene moiety and is at least partially conjugated with the branch portion Y, and in that the polymer reversibly assumes an insulative state and a metallic state, depending on the presence of an external factor.

15 2. A dendritic polymer according to claim 1, wherein the external factor is electricity.

3. A dendritic polymer according to claim 1, wherein the external factor is photoexcitation.

4. A dendritic polymer according to any one of claims 20 1 to 3, containing substantially no doping reagent.

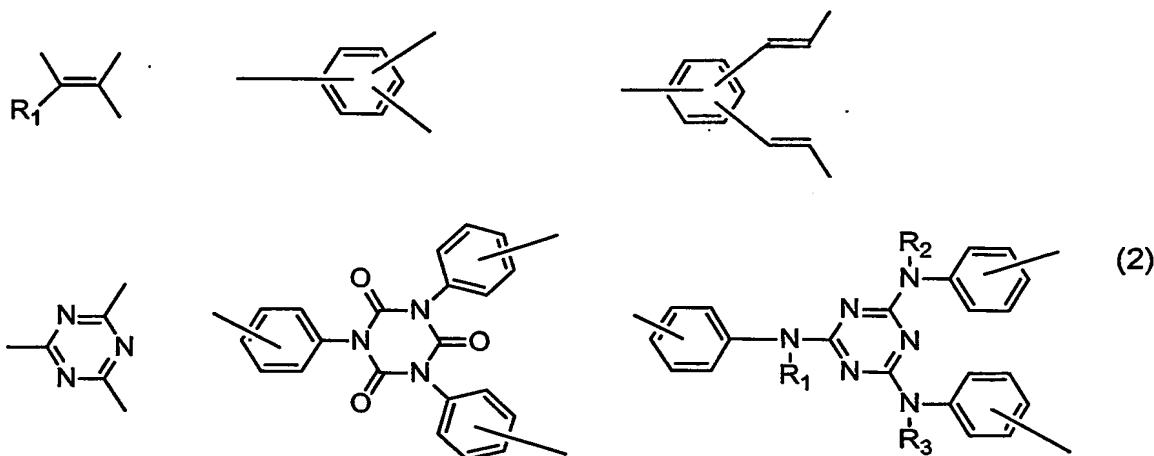
5. A dendritic polymer according to any one of claims 1 to 4, wherein the portion X included in the repeating unit and serving as a starting point of the branching structure is further bonded to a center moiety serving as a core.

6. A dendritic polymer according to claim 5, wherein the core is a group having a valence of at least two to which at least two of the repeating unit can be directly bonded.

7. A dendritic polymer according to any one of claims 5 1 to 6, wherein the portion Y included in the repeating unit and serving as an end of the branching structure is bonded to end moieties which are different from the repeating unit.

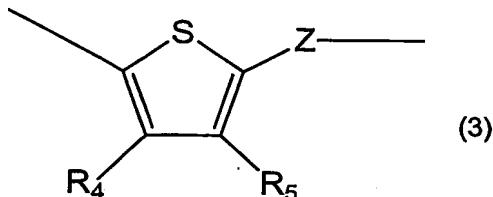
8. A dendritic polymer according to any one of claims 1 to 7, wherein the branch portion Y includes, as a branching center, a chemical entity selected from among chain hydrocarbons (aliphatic hydrocarbons), cyclic hydrocarbons (including alicyclic compounds and aromatic compounds), and heterocyclic compounds (including aromatic heterocyclic compounds and non-aromatic heterocyclic compounds).

15 9. A dendritic polymer according to claim 8, wherein the branch portion Y is selected from among the moieties represented by formula (2):



wherein each of R₁, R₂, and R₃ represents a hydrogen atom or an alkyl group.

10. A dendritic polymer according to any one of claims 1 to 9, wherein the linear portion X is represented by formula (3), and is at least partially conjugated with the branch portion Y:



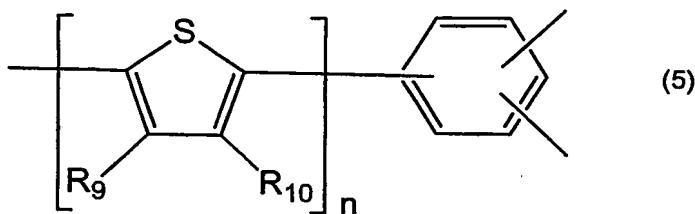
5 wherein Z represents a single bond or an optionally substituted divalent organic group which is at least partially conjugated with thiénylene; and each of R₄ and R₅ is selected from hydrogen, an alkyl group, and an alkoxy group.

10 11. A dendritic polymer according to claim 10, wherein the substituent Z is a substituent formed from a moiety selected from the group consisting of substituted or unsubstituted chain hydrocarbon (aliphatic hydrocarbon) moieties, substituted or unsubstituted cyclic hydrocarbon 15 (including alicyclic compound and aromatic compound) moieties, and substituted or unsubstituted heterocyclic compound (including aromatic heterocyclic compound and non-aromatic heterocyclic compound) moieties; a substituent formed from a plurality of same moieties continuously linked together selected from said group; or a substituent formed from a plurality of different moieties continuously linked together selected from said group.

20 12. A dendritic polymer according to claim 11, wherein

wherein A_1 represents O, S, or N-R₈, and each of R₆, R₇, and R₈ represents a hydrogen atom or an alkyl group.

14. A dendritic polymer according to any one of claims 1 to 9, wherein the repeating unit is represented by formula 5 (5) :



wherein each of R₉ and R₁₀ is selected from hydrogen, an alkyl group, and an alkoxy group, and n represents an integer of 1 to 10.

15. A dendritic polymer according to any one of claims 10 1 to 14, which is a dendrimer.

16. An electronic device element characterized by employing a dendritic polymer as recited in any one claims 1 to 15.

17. An electronic device element according to claim 16, 15 which is a charge-transporting device element.

18. An electronic device element according to claim 16, which is a switching transistor element.

19. An electronic device element according to claim 16, which is a light-emitting device element.

20. An electronic device element according to claim 16, which is a photoelectric conversion device element.